The CAMPAIGN AGAINST MALNUTRITION

Prepared by

ADVISORY COMMITTEE ON FOODS AND NUTRITION

of the

NATIONAL CHILD HEALTH COUNCIL

in cooperation with the

UNITED STATES PUBLIC HEALTH SERVICE

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CONSTITUENT ORGANIZATIONS OF COUNCIL

American Child Health Association
American Red Cross
National Child Labor Committee
National Organization for Public Health Nursing
National Tuberculosis Association

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THE CAMPAIGN AGAINST MALNUTRITION.

Outline of Report.

FOREWORD.[a]

Extent of Malnutrition.

MALNUTRITION is a term commonly used to describe the condition of a child who is not developing properly.[1] Studies made in various sections of the country indicate that there is a serious amount of malnutrition among the children of any area in which, for several years, there have not been systematic efforts to correct it. It is estimated by competent authorities that at least 20 per cent of the school children in our country are so much under average weight as to suggest the possibility that they are physically subnormal. Some persons believe that this estimate should be increased to 33 per cent or more. Malnutrition does not appear to be confined to any one race or class, for studies made in some cities have shown it to be more extensive in the families of the well to do than in those of more limited means.

Health Education as a Preventive Measure.

Intensive health supervision and corrective measures for this subnormal group are essential, but sound common sense points to the necessity of measures which will prevent many of the conditions causing malnutrition. A well-balanced piece of preventive work will include a thoroughgoing program of health education in the schools. It will also include energetic efforts to get parents to cooperate, reaching in this way, not only school children, but children under school age. Preventive work with the preschool child should be strongly emphasized, for it is during the early years of a child's life that it can be most effective.

Children of school age usually may be reached most easily by the school; to reach those under school age is more difficult and each community should give careful thought to the best methods of dealing with the preschool group.

Corrective measures should be used only for those children who, in the judgment of the physician, need more careful supervision than can be given in a general preventive program.

Better Training for Health and Nutrition Work.

If school-teachers are to do sound health work, it is essential that normal schools offer adequate training in health education, with appropriate emphasis on food in its relation to the growth of children

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[a] For list of members of Advisory Committee see p. 33.

[1] See appendix for statement giving a definition of malnutrition, standards for its identification, characteristic signs of improvement, and causes.

and the influence of physical defects on nutrition. It is also important that medical and nursing schools shall give training in nutrition from the standpoint of preventive dietetics.

Home economics courses should put proper emphasis on nutrition as related to health. The supervisor of home economics in the school system is the logical person to plan and supervise the nutrition work in the schools, but, unfortunately, in many instances she has had too little training in the factors that contribute to malnutrition, or has too little time to give to the work. Her training should fit her for the work in its most modern aspect and, if necessary, her schedule should be reorganized so that her services may be available; her contacts should not be confined to a few girls in the cookery laboratory.

Suggestions Adaptable to Small and Large Cities.

The following suggestions are intended to suit conditions in a city of 25,000 to 30,000 inhabitants, because a community of this size often presents some of the serious urban problems found in larger places. Measures for such a city should be easily adapted for use in larger places and at the same time be useful and suggestive in smaller places, even in country districts. To be successful in rural communities, however, work must differ fundamentally in certain particulars from that done in towns or cities and, consequently, some suggestions concerning the conduct of nutrition work in country districts have been added.

Classes of Work Included.

1. Preventive nutrition work which should be a part of a program of health education for *all normal children* [2] of school age.
2. Corrective work for school children who are physically subnormal and in need of special attention.
3. Nutrition work with children under school age, both normal and subnormal.

Nutrition Work a Part of a Community Health Program.

Nutrition work should be conducted as a part of the general health work of the community and should in no case be promoted to the detriment of its other legitimate activities. If there is a general community health program such parts of the following plan may be incorporated as will not cause duplication. If there is no such program, then the one here presented, modified to suit each community, may be used as a guide and as an initial step leading up to a general health plan.

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[2] The general health education program has not been dealt with at any length because the National Child Health Council's Advisory Committee on Health Education has covered that subject in another report. See U. S. Bureau of Education, Health Studies No. 1, 1922

PRELIMINARY WORK IN THE COMMUNITY.

AROUSE COMMUNITY INTEREST IN THE MALNOURISHED CHILD.

THE community should be aroused to interest in the malnourished child. This may be done through forceful, well-qualified speakers; exhibits that show the amount and seriousness of malnutrition, and the results that have been accomplished through well-planned programs; articles in magazines; moving pictures; health plays, parades, pageants, and dramatizations; posters and window displays.

Speakers and exhibit material often may be obtained from the sources listed below and from those included in the appendix. As a rule speakers from such sources prefer to discuss child health in general, considering malnutrition as one phase of the subject.

State departments of health and public welfare.

Extension departments of State universities, agricultural colleges, and normal schools.

School authorities of city, county, and State.

Parent-teacher organizations.

Local or State tuberculosis or other health societies.

Other organizations. (See appendix.)

There are usually a number of local organizations whose interest may and, if possible, should be enlisted to sponsor the movement. For permanency, such work should be organized with agencies best fitted to develop it steadily and continuously. A list of some of these organizations includes: [3]

Board of health.
Medical society.
School board.
Red Cross chapter.
Tuberculosis association.
Parent-teacher association.
Women's clubs.
Infant-welfare and visiting nurse associations.
Association of university women.
Settlements and social welfare agencies.
Churches.
Libraries.
Chamber of commerce.
Rotary Club.
Kiwanis Club.
The Lions.
Civic leagues.
Citizen's associations.
Trade-unions.
The grange.

[3] In smaller communities some of these organizations will not be found.

DEVELOP LOCAL LEADERSHIP FOR THE CAMPAIGN.

To be most effective the campaign should have the backing of some or all of the organizations listed in the preceding paragraph. A central committee might well be formed of their representatives. The interest and cooperation of prominent private individuals also should be enlisted wherever possible. The central committee should be an integral part of the public-health organization of the community, with whose program its work should be correlated.

USE EXISTING MACHINERY TO CARRY ON THE WORK.

If appropriate means for conducting the work already exist, it is important that such machinery be used. A thorough survey, therefore, should be made to determine what nutrition work is already being done, what more should be done, and what agencies and facilities in the locality can assist in the work or take entire charge of it. The local committee, or those who have the program in charge, should endeavor to secure the cooperation of all existing organizations, health officials, the local medical profession, or both, wherever possible. It should be borne in mind that nutrition work should always be a first step toward a complete health program or else a part of it.

The following agencies will be found useful in conducting corrective work:

Board of health.
Medical society.
Health centers (public or private).
Private child-welfare and health organizations.
Visiting or district nurse headquarters.
Maternity centers.
Infant-welfare stations or baby clinics.
Hospitals.
Out-patient clinics.
Dispensaries.
Hospital social service departments.
Red Cross chapter.
Settlements.
Day nurseries.
Orphan asylums.
Schools (public, parochial, or private).
Churches and Sunday schools.
Community centers.
Relief organizations.
Citizens associations.
Civic organizations.

MAKE A SURVEY TO DETERMINE THE SIZE OF THE PROBLEM.

Segregate the Malnourished Group.

Physical examinations.—A complete physical examination of all children by competent physicians is the most reliable basis for determining whether they are developin normally. This examina-

tion should include the weighing and measuring of each child as a first step. A complete physical examination once a year is desirable for all children, but essential if we are to know their condition and have an adequate basis for suggesting proper methods for the care of the underweight and physically unfit.

Weighing and measuring.—Where a lack of funds or facilities makes a complete examination for all children impossible, weighing and measuring them will afford a means of selecting the group which will contain the large proportion of malnourished children. Those found to be 10 per cent or more below or 20 per cent or more over the average weight for height and age may be taken as a group which should be examined to determine whether they need further attention. This will not reveal all undernourished children, but it will serve as a starting point.[4]

Study the Causes of Malnutrition.[5]

The causes of malnutrition must be clearly understood by those who plan and carry out the survey to determine the extent of malnutrition in the community as well as by those who work with the malnourished group after it has been segregated.

It is important not only to know how the habits, condition, and immediate environment of the individual child affect the situation, but also what conditions in the community contribute to the problem. Some of the points mentioned below may be considered in the survey itself, particularly those regarding community conditions.

Physical defects, habits, and immediate environment affecting the nutrition of the individual child.—A large proportion of underweight children have physical defects of some kind and will not gain until these defects have been corrected. Often correction of defects is all that is necessary to give a child a chance to develop normally. Nasopharyngeal obstructions are a factor of the greatest influence in causing malnutrition, since they prevent proper breathing and intake of oxygen. Carious teeth, which are found in a large number of cases, are a good breeding place for germs, prevent proper mastication, and thus hinder good nutrition. These two classes of defects are mentioned because they are very common. There are, of course, others more serious.

Overfatigue is a cause of malnutrition which is often difficult to recognize, as a very moderate amount of exercise will have an undesirable effect on some children. A child that grows rapidly will often, even when nutrition is apparently good, be apt to experience

[4] See appendix for statement concerning malnutrition, standards for its identification, etc.

[5] See "Points to be borne in mind by those in charge of nutrition work" for further discussion of the causes, page 17.

exhaustion after limited physical exercise. Such exhaustion often interferes with school progress. Its most common manifestation is lack of concentration and inability to apply the mind to any one thing for more than a few minutes at a time except under special stimulus. Exhaustion is frequently due to too intense or exacting a daily program for the child, too heavy school work, too many outside classes or lessons, too much physical exercise, especially too much strenuous play, too many "movies," and too much nervous excitement. (See p. 18 for suggestions regarding rest.)

Improper diet and faulty food and health habits are very large factors in the production of the most common forms of malnutrition. They are often due to ignorance and perhaps even more often to a lack of home discipline, which is one of the main indirect factors causing malnutrition. Poverty also makes it impossible to obtain an adequate diet in some cases. In the appendix there is a list of some good food and health habits which should be observed. If these habits are to become a part of the child's daily life, the education and cooperation of parents must be assured.

Children should be taught to breathe, stand, sit, and walk properly. The body can not utilize food without air for oxidation, and an erect, easy carriage is necessary not only to the free play of the lungs but to the proper position and functioning of the larger organs in the trunk.

Faulty posture or incorrect body mechanics is associated with fatigue and is one of the conditions most commonly found in malnourished children. Faulty posture, fatigue, and malnutrition form a vicious circle and react one upon the other. They should all be corrected to obtain the best results. Faulty posture may be helped by corrective exercises, carefully supervised by specially trained instructors, under the direction of an orthopedist. In prescribing exercises as an aid to the correction of faulty posture the fullest consideration should be given the fact that the undernourished muscles are very susceptible to fatigue and that this militates against upbuilding. Therefore muscular exercises should be prescribed and directed with extreme caution and with careful study of both their immediate and remote effects.

All orthopedic defects should be recorded in the course of the physical examination, and appropriate steps should be taken to obtain their correction.

In many cases children fail to gain because of conditions in the home which are beyond their control. It has been found that fear of punishment and constant nagging and scolding have sometimes caused failure to gain. Where this cause has been corrected, some remarkable gains have been noted.

Many homes have inadequate and unsatisfactory sleeping accommodations, and children fail to get enough sleep or fresh air at night. There may be insufficient food or an ill-balanced diet because of low income or conditions that the family can not correct. In such cases cooperation with some social agency is essential if gains are to be permanent.

General community conditions which may contribute to malnutrition.—The nutrition program can not be fully effective unless consideration is given to such factors as the following:

Housing conditions.
Sanitary conditions in school buildings.
Atmospheric contamination by smoke or other substances.
Availability of pure water.
Facilities and opportunities for play and recreation.
Employment of women and children in industry and overwork at home.
Market conditions:
1. Food inspection and control.
2. Availability of certain foods, especially milk and leafy vegetables.
3. High prices.

Medical and dental service.
Organization of school programs so that pupils may not be overtaxed, and a proper relation between work and rest may be maintained.

All of these things should be considered not merely because of their effect on nutrition, but because of their serious bearing on the health of the entire community. Those engaged in the health or nutrition program should stimulate the proper agencies to eliminate bad conditions, but failure to effect improvement in this direction should not be allowed to discourage attempts to carry out the work. If based on sound principles this will justify itself in communities where conditions are far from desirable. Some of the appropriate agencies to be interested in improving conditions are: Private health organizations, local health departments, boards of education, chambers of commerce, consumers' leagues, women's clubs, citizens' associations, and housing commissions. Such bodies as the United States Bureau of Markets, the State labor bureau, and State departments or boards of agriculture often may be of assistance.

OBTAIN PUBLICITY REGARDING MALNUTRITION IN THE COMMUNITY.

It is important that publicity be obtained regarding the results of physical examinations or the weighing and measuring campaign. This may be effective in arousing the community to action. Comparisons of local conditions with those found in other cities often are valuable and stimulating. A special subcommittee should be appointed to deal with this question, and the editor of the local paper might well be made its chairman.

NUTRITION WORK IN THE SCHOOL HEALTH PROGRAM.

IN the foreword to this report mention was made of the prime necessity for combating malnutrition by preventive measures, one of the most effective of which is a thoroughgoing program of health education in the schools, with proper attention to diet and nutrition. As stated previously, a program dealing specifically with health education has been prepared by the advisory committee on health education of the National Child Health Council, and only a summary is included here for the sake of suggesting a well-rounded program. For a fuller discussion of school health work the reader is referred to School Health Studies No. 1, United States Bureau of Education, 1922.

ORGANIZATION OF NUTRITION WORK FOR NORMAL CHILDREN IN THE SCHOOLS.

Every child should have a complete physical examination, and all defects discovered in the course of this should be corrected promptly. Health education should permeate the entire school curriculum and include among other things information regarding food and correct food habits. Such information may be incorporated in lessons on reading, writing, English, history, geography, drawing, biology, and mathematics, as this is a most effective way to bring about a constant natural absorption of health truths.

More direct methods of teaching good nutrition to normal children also should be a part of the regular school health program. Work of this kind will be found of greater value than mere informational material and should be under the direction of a well-trained supervisor of nutrition on the school staff.

Efficiency and economy make it advisable to enlist the services of the home economics teachers already employed in the school system to supervise instruction regarding nutrition. To be successful, however, they must have (*a*) an adequate general training in health subjects, (*b*) a knowledge of modern nutritional subjects with especial emphasis on methods of controlling malnutrition, (*c*) time for effective supervision of the nutrition program, and (*d*) the advice and guidance of a physician, preferably the school physician. Where present supervisors lack training which will give them the desired viewpoint, they should be expected to obtain it and should be given the time necessary to organize the work. On page 12 will be found suggestions

for obtaining nutritional guidance on a part-time or consultant basis, where it is not possible to obtain it on a full-time basis. If the school system is unable to pay for such services, some agency outside the schools may finance the work, but in any case the nutrition worker in the schools should be considered a regular member of the faculty. The nutrition worker should give to the class room teachers a graded course of instruction concerning food and food habits. This instruction should be simple enough to be repeated to the children, who should receive it, in turn, from the classroom teacher. The nutrition worker should, for purposes of demonstration, teach the children herself occasionally, giving individual attention to the children in need of it. This course of instruction in nutrition should be correlated with the instruction in the other aspects of hygiene which may be given by grade teachers and by other health workers, such as the doctor, the nurse, and the teacher of physical training.

THE PLACE OF THE MIDDAY LUNCH IN THE SCHOOL HEALTH PROGRAM.[6]

The problem of malnutrition can by no means be solved by the midday meal at school, but this feature of the program is justified if nothing more is accomplished than to provide an adequate meal for children who find it impossible to get a good midday luncheon or dinner at home. When the school lunch is used as a means of influencing the food eaten at home its value is greatly increased. If the lunch is carefully planned, prepared, and served there is an excellent opportunity for:

(1) Teaching what foods are necessary for health, and how these foods must be used to insure good results.

(2) Helping to establish a taste for the right foods and influencing children to eat them at home as well as at school.

(3) Interesting children to eat unfamiliar foods which they refuse to eat at home.

(4) Establishing habits of cleanliness, good table manners, and consideration for those who cook and serve the food.

(5) Instructing mothers in the correct feeding of children.[7]

The school lunch may serve as a practical demonstration to reinforce the teaching of nutrition in the classroom. The facts may be driven home by such remarks as "You see, we serve milk or cocoa instead of coffee," and "We serve vegetables because it is cheaper and better to get vitamines, iron, calcium, and other things needed in the body in food than in medicines." Food facts may be taught through talks, stories, and posters. Literature may be obtained from some of the agencies listed in the appendix.

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[6] Lunches to be paid for by the children wherever possible.

[7] Mothers may be invited to the lunch room to taste the kinds of food children should be taught to eat and may be taught how to make the children eat the things they should.

REQUIREMENTS ESSENTIAL TO THE SUCCESS OF THE SCHOOL LUNCH.

There are three requirements which are essential to the success of the school lunch: (1) The teacher must have a knowledge of food in its relation to health and a will to teach the child proper food and health habits; (2) school authorities, parents, and public-spirited citizens must see that the school lunch is efficiently managed and that the opportunities which it offers for educational and social improvement are fully utilized; and (3) the financial control of the lunch should be vested in the school board, which should provide facilities and equipment, pay all employees, and control receipts and expenditures. In some cases money to finance the lunch has been furnished by local organizations or philanthropic individuals; funds also have been raised through school functions, and in some instances food has been contributed by the pupils. These methods vary in degree of satisfaction, but no method is so satisfactory as financial control by the school board. This, fortunately, has been legalized by several States.

Whatever method of financing may be adopted, it should be emphasized that the school lunch is not a plan for the free feeding of children, in school or out, but a measure of value in the school health program. Comparatively few children will be found in any community who are unable to pay for the lunch. These may be cared for quietly without stigma through the philanthropic organizations of the community—the Junior Red Cross, the tuberculosis association, the parent-teacher associations, or women's clubs. In some cases those who can not pay the entire cost can pay part, and this is desirable, for the payment of even a few pennies a week serves to retain self-respect and lessen tendencies toward pauperization.

THE MIDMORNING AND MIDAFTERNOON LUNCH.

While there is little conclusive evidence, based upon careful study, as to the results of midmorning lunches, general reports received from supporters of the movement attest their beneficial effect.

The reasons in favor of the midmorning lunch are (1) that many school children, particularly those in the lower grades and those who are below par physically, do better on four meals than on three meals a day, and (2) that many children, especially those of working families, eat their breakfast at an early hour and have to go too long without food if they do not have anything to eat between breakfast and the noon recess.

On the other hand, some assert that the midmorning lunch has been supplied without proper social safeguards, in at least some

instances, and has served to decrease the parent's sense of responsibility for providing adequate food at home. In all cases school authorities should assure themselves that the lunch is not being made an excuse by parents for cutting off a part of the child's food at home, and where this is suspected to be the case, careful follow-up work should be done.

Some pediatrists advise discrimination in the selection of children to receive midmorning lunches, so that those not in need of extra nourishment will not receive it and so that the food is not too much a duplication of that received at home. It is important that the judgment of the school medical examiner, where available, should be had as to the extent to which such lunches should be provided. This is particularly true in cases where it is proposed to provide both midmorning and midafternoon lunches for children who are underweight or show other signs of malnutrition. The weight of opinion is in favor of the midmorning lunch under proper safeguards, particularly for children who are below par. Unfortunately, both its value and the possible disadvantages of its use without proper discrimination are too largely subjects of opinion.

FACILITIES AND METHODS FOR CORRECTIVE WORK.

CENTERS FOR SERVICE AND NECESSARY EQUIPMENT.

A GOOD location is essential. Some questions to be considered in deciding upon the location of centers are:

Where may mothers and fathers as well as children be reached most readily?
Where may best cooperation be obtained?
What place affords best facilities for work and is freest from interruptions?
Where will the child get a positive rather than a negative idea of health?.

Hospitals, clinics, and dispensaries where medical supervision is available generally should be reserved for cases of organic disease and severe malnutrition. Ordinarily it is not desirable to bring children to places associated with disease for class work. Certain "Well Baby Clinics," orthopedic and other hospitals, in which children stay over long periods of time, form an exception to this rule, and hospitals may do very useful work in holding health or nutrition classes for convalescent children.

The following places constitute possible locations for centers:

Schools.[8]
Health centers.
Municipal or county rest rooms.
Farmers' headquarters.
Day nurseries.
Settlements, churches, etc.
Public-health nursing offices.

The following places will be found particularly useful for the younger children:

Infant-welfare stations.
Maternity centers.
Milk stations.
Kindergartens and settlements.
Day nurseries.

Facilities and equipment.[9]—A well-lighted, well-ventilated, clean, quiet room, where the work will be free from interruptions, is needed.

[8] The school building is almost always the best place for work with the school child and should be used if available. Ideally, every school building should have a well-equipped, well-lighted room for the use of school physicians and nurses. If it can be obtained at a time when the work will not be interrupted, this room, or the home economics classroom, may be used for the conduct of nutrition classes.

[9] It should be understood that the facilities and equipment outlined are desirable for efficient operation. While excellent work has been done without some of these facilities and without certain parts of this equipment, anything less desirable places the nutrition worker at a disadvantage and means that the work must be conducted under a handicap.

This room should be easily accessible and not above the second floor, unless an elevator is available. It should be equipped with running water and toilet facilities, and should have wall space sufficient for permanent exhibits and individual charts for the children in the nutrition classes.

The following equipment will be needed:

Essential—

Scales (standard rod scales) and, if needed, an infant scale.

Measuring rod (a substantial one on wall as well as on scale advisable). Two yardsticks tacked against a flat wall are preferable to tape lines, which stretch under continuous use unless pasted to a flat measuring board.[10]

Low benches and little chairs for children and chairs for parents.

Tables.

Screens or curtains.

Facilities for hanging wraps (wraps should be hung so as not to touch each other).

Facilities for making and hanging charts.

Such additional equipment as the physician may specify.

Desirable—

A blackboard for class instruction.

Cases for food exhibits.

A file for records and large charts.

A gas stove, or electric plate, and oven; and such cooking utensils as simple demonstrations may necessitate.

STAFF REQUIRED.

Medical service.—Cases of severe malnutrition require long, close, continued medical supervision, and where nutrition classes are held the physician should visit them regularly. Medical services preferably should be paid for and may be secured on a part-time basis. Physicians should give physical examinations to all undernourished children, reexamine children who do not improve, and give consultation and supervisory service both to individuals and to health and nutrition classes.

Nutritional supervision.—In an extensive piece of work there should be employed on full-time a nutrition worker[11] who has had special training in foods as related to nutrition, and growth of children, and food economics. This worker should have a thorough understanding of the importance of physical defects and other individual or environmental causes of malnutrition; and should possess marked teaching ability, as one of the most important parts of the work is that done in instructing nurses and other workers in normal nutrition.

[10] To determine height a square block should be placed on the top of the child's head and against the measure. Such a block is preferable to a ruler or any thinner object, which invariably slants more or less

[11] See standards recommended by the Advisory Committee on Foods and Nutrition of the National Child Health Council.

Where it is not feasible to employ such a specialist on full-time at each center or station, one of several methods may be adopted:

(*a*) Service of one worker may be made available for several stations combined.

(*b*) In smaller places such services may be provided on a cooperative basis with educational institutions, local hospitals, or health agencies.

(*c*) In country districts guidance may be obtained from larger communities near by, or by an arrangement with the county home demonstration agent.

In some cases several towns have combined in the employment of such a supervisor.

A specialist of this kind should visit schools (where there is no supervisor of home economics in the school system) and stations, train teachers, nurses, and other workers in normal nutrition and food economics, and give general consultation service in the solution of difficult nutritional problems.

Nursing service.—Where nutrition work is under the general supervision of a trained nutrition worker, who has sufficient time or assistance for class work and follow-up work in cases involving dietary problems, nurses may confine their follow-up work to that necessary to obtain the correction of physical defects, see that patients receive proper care after correction, watch children for symptoms of disease, and give individual instruction regarding the observance of good health habits. They should also share in the teaching of health habits and hygiene in the nutrition classes and to the teachers.

Where there is no nutrition worker attached to the staff, it is very important that nurses, in carrying on such nutrition activities as are practicable in view of their training, should supplement their knowledge of foods and food habits and secure assistance in solving food problems from some person well trained in nutrition, such as the local home economics teacher or farm bureau representative.

Nutrition field workers.—Where the budget makes it possible, there should be nutrition field workers to go into homes and help mothers deal with special dietary problems which are beyond the experience of the average field health worker who has not had special training in nutrition. As in the case of the nutrition supervisor, such a person should be adequately prepared from health and social service standpoint. She also should teach nutrition classes. In an extensive program, where there are many children to be handled in classes, one nutrition field worker should be assigned to class work. The personality and training of the class teacher are very important, for unless she is able to enlist the interest of the children and make her teaching forceful, she can not be successful.

Auxiliaries.—All suitable agencies in the community should cooperate in carrying on the nutrition program, so that expense and duplication may be avoided and the work may have the benefit of varying points of view. Some agencies that may not have facilities for assisting in the work may be important factors in financing and popularizing it.

Volunteers.—Volunteers may be chosen from cooperating organizations, especially from women's clubs, parent-teacher associations, and associations of collegiate alumnæ. Service by volunteers is always valuable, as it tends to extend interest. Volunteers may be trained to take children to dispensaries, to keep records, to help with regular weekly weighings, to make charts, and assist in other ways. This increases the amount of specialized work which may be done by more highly trained persons. Volunteers, however, should take special training, through nutrition conferences or institutes, to be of the most effective service.

METHODS OF WORK.

In preventing malnutrition there should be a general health program to educate the whole community—fathers, mothers, and children. Parents may be reached through literature, lectures, entertainments, general propaganda, clinics, and home visits. Children may be reached through schools, clubs, entertainments, and classes, and in other ways.

Work with the Child Under School Age.

Special emphasis should be placed upon work with children under school age, so that they may develop normally. If proper prenatal care could be given and if the habits of children could be regulated from birth to school age, the health work now necessary in schools might be greatly reduced.

Mothers should be urged to bring the babies and younger children to health centers at stated intervals for examination and advice. They may be encouraged to do this by visits to their homes and in general meetings. At first mothers have to be urged to come to the station and often must be accompanied. When the benefit to their children is made evident, however, they will seek help, and home visits may be made less frequently.

The class methods employed for children of school age must be modified if group instruction is to be successfully attempted with preschool children. In some nursery schools health education has been successfully given in connection with lunches, carefully planned and supervised, and even with very young children the influence of the group has proved valuable in cultivating the habit of taking

proper food. In some cases successful classes have been formed for mothers and children, the chief emphasis being put on habit formation. Some nutrition workers have found it valuable to conduct a part of the work only in the presence of the children. In these cases facts that will hold the interest of the children are discussed while they are in the class; after they are dismissed their mothers are instructed regarding their diet and other important matters.

Mothers should always accompany young children to the class, for the main benefit from the work results in the instruction which they receive in the presence of the children. Whatever class methods may be employed, the importance of home visiting by the nurse or nutrition field worker (where one is employed) must not be overlooked.

The importance of thorough and competent medical supervision as a foundation for nutrition work is particularly apparent with the preschool group. The disclosure of defects at this age, with a careful follow-up for their correction, gives the child a better chance to start his school career unhampered by physical disabilities.

Work with the Malnourished Child of School Age.

For permanent good health and resistance to disease it is necessary to practice good health habits, and the importance of general health education and health supervision for all school children has already been discussed. They should be given general instruction in health habits and food values, and every possible method should be used to stimulate them to follow the health program. Children below weight, but with no physical defects, those whose defects have been remedied, or those who are temporarily underweight from illness will usually come up rapidly under such general instruction.

Children should have, upon school entrance, a complete health examination by trained school physicians, which will test and record their physical and mental conditions and adjustments. They should be examined annually thereafter, or at least once in every two or three years. Those below par should be reexamined with such frequency as their particular conditions indicate, and those who are retarded in school progress should be reexamined carefully to determine whether their slow progress is due to discoverable and remediable health defects.

In actual practice the frequency of examinations will depend upon the financial resources of the school. In many communities health examinations are not now given to any of the children. These communities should be made to realize their importance, and in such places earnest efforts should be made to have examined at least those children who are underweight or who show other signs of malnutrition.

If necessary in the judgment of the physician, these children may be referred to the nutrition or health classes for intensive work. To gain interest and cooperation it is well to have one or both parents and the classroom teacher present at the examination.

Correction of Physical Defects.

After physical defects have been noted, children should be referred to the family physician for their correction. Those who are unable to pay should be given dispensary or hospital service, dental service, or care by an oculist provided by the community.

Class Methods.

The following discussion of class methods is not designed to furnish guidance as to the ways and means of interesting and stimulating children, whose cooperation is essential to the effective conduct of the work. Methods of obtaining such cooperation have been ably dealt with in publications issued by such agencies as the United States Bureau of Education; Bureau of Educational Experiments, New York, N. Y.; the Child Health Organization of America; Teachers' College of Columbia University; the Elizabeth McCormick Memorial Fund; Nutrition Clinics for Delicate Children; and some others included in the list appended to this report.

Even at the risk of repetition, it should be emphasized that in conducting nutrition classes it is necessary to have (*a*) thoroughgoing health examinations and medical supervision for all children; (*b*) adequate medical and nursing service for the correction of physical defects and bad health conditions; and (*c*) advice and supervision as to foods and methods of food preparation by a thoroughly trained nutrition worker, whether on a full-time, part-time, or a consultant basis.

Physical defects, including carious teeth, should be corrected, if possible, before much time is spent in trying to make children gain by readjusting health habits. Good health habits should certainly be established as soon as possible, but there is often a useless expenditure of time and energy in attributing failure to gain to bad habits when there is some underlying physical obstruction.[12] It is well to secure the cooperation of the parents at the outset, through home visits if necessary, and mothers should be urged to attend the class.

A worker in charge of nutrition classes can care for approximately 100 children in classes of 20 each for intensive work. With this number some clerical help will be required; and also assistance in

[12] Some physicians believe that children with enlarged tonsils should not be operated upon until an attempt has been made to build them up physically.

home visiting. A nutrition worker may handle larger groups in schools where instruction regarding nutrition is given as a part of the general health program for all school children, in correlation with instruction in other aspects of hygiene given by grade teachers and special health workers, such as the physician and nurse.

The class should meet each week and children should be weighed weekly, after coats, sweaters, and shoes have been removed. Heights should be taken at the first lesson and retaken at least every three months. Weights should be recorded on weight charts, so that gains and losses may be discussed with mothers and children. Children should be stimulated to develop good food and health habits. The actual class work should not last over 20 to 30 minutes.

Devices for stimulating interest are: Cards [13] (which may be illustrated), giving actual weight of a child and the proper weight for height and age; different-colored stars for gains or losses; games, stories, and plays; the making of pictures, posters, or food exhibits; placing children on parole for a period of from three to six months; appropriate exercises, with presentation of some sort of certificate when the children have shown that they are following the rules of health and have made satisfactory gains. It is most important that such exercises or certificates shall not give the children the impression that they have graduated from the observance of health habits. There is a real danger if they are not used as an incentive to further progress as well as a recognition of past progress. Children should be watched for 6 months to one year after graduation to see that they continue to gain normally. Due weight should be given to seasonal variations. In the spring and fall some losses and gains may be attributed to changes in clothing.

If classes are included as a part of the school program, every effort should be made to hold them during school hours, as the work then has the sanction of the school, and both children and teachers have a better attitude toward it. If this is impossible, the class should meet after school, either in the school building or at some place near by.

Home Instruction or Intensive Work.

The necessity for home visiting is vital, whether we deal with children individually or in groups, or deal with their mothers at the place where the class is held. Often it is only by a visit that the cause for unsatisfactory progress may be discovered. The visitor may work with the mother to show her how to correct unfavorable conditions and to encourage her in matters of child discipline. Instruction regarding the relation of physical defects to malnutrition

[13] When these cards are given to the children at appropriate intervals they may include one health habit and a recipe for a desirable food.

and the necessity for good health habits, proper food, marketing, and even food preparation may be necessary. Portable scales may be used for weighing small children. Wherever it is possible to see the father of the family, educational work may be done at a point much needed.

Relative Value of Group and Intensive Methods.

A combination of group work and home instruction is usually most satisfactory. Their respective points of advantage are:

The group method.—A larger number of children may be reached when handled in groups and the group spirit makes it possible to interest some children who would be reached with much more difficulty individually. Group work lessons the amount of necessary home visiting (which is expensive) and admits an easier appeal to community interest. On the other hand, individual and home problems are not so intimately known when group work alone is used, and causes of lack of progress are often overlooked. It is well to remember that group work is not generally successful unless the group consists of children of the same age.

Individual or home work.—Home visits give more lasting results than any other method and are essential for effective work with children of preschool age as they are too young to receive much benefit by group instruction. They are also essential for effective work with school children who are held back in their progress. They are especially effective in hastening the progress of children who are handled in groups. They are often essential to prevent parents from getting from children wrong impressions about the work and in correcting the misrepresentation of home conditions by the children. The expense of the intensive method is greater than that of the group method, but it can not be dispensed with if thoroughly successful work is to be done.

Points to be Borne in Mind by Those in Charge of Corrective Work, Whether Work Is Being Done in Groups or Individually.

Under the statement concerning the causes of malnutrition on page 3 the importance of correcting physical defects, of adequate sleep and rest, and the observance of good food and health habits were discussed. It is believed that the following suggestions will be useful in emphasizing these points:

Lack of home discipline.—Lack of home discipline is one of the most important factors in causing malnutrition, and mothers must be impressed with the importance of training children to form good food and health habits. Parents must be brought to see the part they can play in the program by helping children to form good health habits and by providing them with proper food.

Rest for the physically subnormal child.—It is important not only that children have long hours of sleep at night, with bedroom windows open, but that their daily program is not too strenuous. The underweight child should be relieved from all strain until he is in normal health. Two daily rest periods, one in the middle of the morning and one in the afternoon, are a great help in lessening overfatigue. [14] It is preferable that the child actually rest, sleep if possible, from 20 minutes to one hour, according to the seriousness of the condition. If it is not possible to induce the child to sleep he should lie down quietly. If necessary, a child may be read to for a few days until the resting habit is formed. The habit of resting completely is as important as eating correctly. The child should be required to bring to the class a record regarding meal times, the time spent at meals, hours for going to bed and getting up, hours spent at school, hours on home lessons, outside classes, music, dancing, languages, drawing, clubs, movies, etc.

Improper food and food habits.—Children should be instructed regarding proper food and good food habits, as they can then analyze their own food habits and correct them if required. As the follow-up worker makes her visits, she may discover what is wrong with the diet and suggest changes. The child may be asked to bring to the second meeting of the nutrition class a record of what he eats (including food eaten between meals) for two or three days, or, better still, for a week. In the light of such information, each child may be helped individually, and information of this kind should be obtained as often as found advisable. Some undernourished children often gain more rapidly on five smaller meals a day than on three heavy meals. To meet this condition, it may be advisable to give mid-morning and mid-afternoon lunches. Such lunches should be given, however, only upon the advice of a physician.

Faulty health habits.—The list of a child's daily activities perhaps will indicate which of his habits are faulty, and he can be stimulated in a dozen picturesque ways to rest, brush his teeth regularly, wash his hands before every meal, take frequent baths, go to the toilet regularly, etc. (See literature prepared by the United States Bureau of Education, American Child Health Association, and other organizations shown in the list printed in appendix.)

[14] Rest periods for subnormal children should be secured in the school where possible, and cots and blankets should be available for this purpose. If cots are not available, the child can rest with the blanket spread on the floor, newspapers being placed under it to avoid dust. Under some conditions it will be found advisable to excuse children from school and give them time to rest at home in the middle of the day, returning to school for the afternoon session. Some authorities believe that it is advisable to have a thin pillow placed under the shoulder blades of the child when resting (not under his head) for the correction of faulty posture common to malnourished children. Such a pillow, however, should be extremely thin, if used.

CHARTS AND RECORDS; ANALYSIS AND SUMMARY OF RESULTS.

It will be necessary to have, besides individual charts to show the progress of each child, charts for the class, which will show the average gain of the group.

The individual charts should be as attractive as possible, and, as they are to be hung on the wall, should be large enough to be seen easily by everybody in the room. They should carry some indication of the average weight of a child of given height and age. This may be a dot or a short line one-half inch long put in once every two or three months. It will vary as the height changes. On the chart should be shown the gain or loss each week or each month as the child is weighed. Charts should furnish accurate information regarding all factors governing the weight of the child.

Efforts should be made to record the same essential information in all parts of the country. If a standard record form could be adopted and used throughout the country or even in an entire community, it would help in the collection of valuable statistical data. In devising records, care should be taken to eliminate unnecessary information. Records may be so elaborate as to constitute a menace to good work, but must be carefully kept and provide adequate information if sound conclusions are to be drawn.

Points to be recorded relate to:

Social and family history.
Medical history.
Physical examination.
Notes of defects corrected; home visits made.
Physical improvement, including gain in weight.
Food and health habits.

These points may be put on one record form or separate forms may be used.

Records for groups should be studied and the results should be summarized so as to set forth the facts concerning such things as:

Factors contributing to malnutrition.
Defects corrected.
Causes of failure to improve.
Extent of family cooperation.
Improvement in food and health habits.
Modifications in children's school and home programs.
Amount of weight increase and improvement in posture, color, muscular development, mental and physical activity, etc.
Length of time required to obtain favorable results.

Samples of charts and records now being used may be obtained from the New York County Chapter, American Red Cross, 598 Madison Avenue, New York, N. Y.; American Child Health Association, 370 Seventh Avenue, New York, N. Y.; Elizabeth McCormick Memorial Fund, 848 North Dearborn Street, Chicago, Ill.; Dietetic Bureau, 376 Boylston Street, Boston, Mass.: Nutrition Clinics for Delicate Children, 44 Dwight Street, Boston, Mass.

MEANS OF MAINTAINING THE WORK.

INTEREST MAY BE SUSTAINED BY:

(*a*) Printed reports, brief but interesting, illustrated with individual and group charts, photographs, etc.

(*b*) Wide newspaper comment, articles in magazines, school papers, etc. (Workers should be encouraged to make full notes and to write up interesting items and stories to be used for publicity.)

(*c*) Programs before local organizations, clubs, mothers' meetings, etc., with graphic exhibits of work and outline of future needs.

(*d*) Group competitions in which a banner or pennant is given to the class or school making signal progress.

COST OF THE WORK.

The nutrition class, representing, as it does, careful, intensive work with individuals, is necessarily a relatively expensive method of fighting malnutrition and should be reserved for children assigned to it as the result of medical examination.

In the report of the National Child Health Council's Advisory Committee on Health Education an estimate of the cost of a school health program in a town of 25,000 to 30,000 people may be found, but sufficient data are not available to admit an authoritative statement as to the average cost per child of nutrition class work. This depends, of course, upon the progress made by the child and the length of time he stays in the class, the number of home visits which are necessary, and many other matters. This matter is one which needs careful study.

The apparent cost of the work will, to a great extent, depend upon the facilities already possessed by the community which can be used to carry it on. The use of existing personnel or facilities for additional work, however, is a matter for earnest consideration. It is often found, for example, that the school physician is already overburdened with the regular work of medical inspection or perhaps simply with the control of communicable disease; that the home economics supervisor and the school nurse are overworked or need supplemental training for nutrition work. In such cases one of the first objectives should be to see that the staff in the schools is made more adequate.

Many physicians are willing to give volunteer service, but so much is already demanded in this line that, if possible, it is only fair to pay for such work. In certain communities half the time of a

younger man interested in nutrition and preventive work may be secured from $150 to $200 a month.

The salaries of field nutrition workers range from $100 for an assistant worker, just graduated from her training in food economics or nutrition, to $125 or $150 a month for more experienced workers. For a supervisor of the kind mentioned on page 11 it may be necessary to pay from $150 to $250 per month. Provision should be made for salary increases as the work progresses.

Most communities of the size under consideration already possess public-health nurses, hospitals, and dispensaries and some have health centers. Where these are inadequate they should be developed, but this should be done as part of a general community health program and not be considered a legitimate charge against the nutrition program. The parents of a majority of children will be found able to pay reasonable fees for the correction of physical defects, and, almost without exception, they are able to pay for the food served in the schools.

It may be necessary for some individual or private organization to take the lead in financing the physician and the first nutrition worker or workers. In several communities the women's clubs or parent-teacher associations have paid the salary of the first nutrition worker, while the Junior Red Cross has often paid for the milk which a few children could not afford to buy. In some cases the Red Cross has financed the salary of a nutrition worker until the work could prove its value.

Often some public-spirited individuals or a private organization must finance the experimental work necessary to prove the wisdom of a new idea, but such a service as that for the malnourished child belongs so essentially to the community at large that the cost of the work should eventually be borne by the public. While it is true that at present few of our public agencies are equipped to carry on this educational work or have standards and ideals equal to those of the private agencies, the aim should be to make public agencies truly serviceable in the health program.

POINTS TO BE CONSIDERED IN RURAL DISTRICTS.

IN the rural sections of the country malnutrition must be fought largely by means of a program of general health education in the schools. If this is to be effective, however, efforts must be made to arouse the interest of rural communities and to see that rural teachers are given more adequate preparation for health training and instruction. In some communities progress has been made by employing county supervisors of health education or nutrition to meet the grade teachers periodically and train them to give effective instruction regarding health and nutrition. After such educational work has been done, however, there will still be need for intensive work in the nutrition class, and conditions in the rural community give rise to many perplexing problems as to the practicability of segregating the malnourished group, conducting classes, correcting defects, obtaining medical supervision, and other matters.

AROUSING AND SUSTAINING INTEREST.

Movements which have been approved by national or State agencies have much more standing in the average rural community than those not so indorsed. In opening the campaign in rural districts it will be well, therefore, to procure in advance and have ready for distribution letters of indorsement from all State educational agencies which deal with health education and nutrition work. Literature issued by national organizations, showing the widespread character of nutrition work and the benefits which have followed it in various parts of the country, also will be of value. In stressing the extent of malnutrition in the early stages, State and national figures should be given instead of local data. In discussing the local situation it is always better to present the positive rather than the negative view, showing State, county, and community achievements in health work, stressing the advantages to health which should accrue from rural life, and thus inspiring the community to realize its best possibilities.

In starting the work a committee should be formed of individuals whose civic interests will make them efficient allies. The persons who naturally would be members of such a committee are the local physicians, county superintendent of schools, teachers, the home demonstration agent, and the public-health nurse (whether employed by the county tuberculosis association or Red Cross chapter). Representatives of the community center, social organizations, such as

the grange, farm bureau, farmers' clubs, and religious organizations, should be on the committee. The rural editor or reporter should be made an active cooperator in the work as he can give valuable assistance in obtaining publicity, and the aid of the librarian and all public-spirited citizens should be sought. The chairman of the central committee should be primarily an individual well known and respected in the community.

Exhibits may be held in the village store, at community, county or State fairs, poultry or other shows, school entertainments, rural teachers' institutes, and at meetings of the grange, farm bureau, or other social, religious, or educational organizations.

It is valuable to obtain speakers from a distance, but local talent should not be ignored. Local physicians, nutrition workers, nurses, ministers, and resident representatives of any interested county, State, or national agency are often able to make valuable contributions, and it is frequently possible to find in the community a married woman, who has been trained in home economics or nursing, who will help with the campaign.

After the community has been aroused to an appreciation of the necessity of the work, a weighing and measuring campaign should be instituted and effort should be made to have at least all children 10 per cent or more below the average weight given a thorough physical examination and to see that all discovered defects are promptly corrected.

When the work has been in progress for a sufficient length of time, achievement meetings, held in the school or other center, are valuable in sustaining interest. The school board and commissioners, as well as the parents, should be invited to such meetings. A lunch, served by the pupils at these meetings, is often effective in arousing interest. General meetings should be held at places where the largest number of persons may be reached and should be advertised sufficiently far ahead so that parents will plan to attend. Playlets given by the children will always be interesting to parents, particularly to those with children in the cast.

COMMUNITY CONDITIONS WHICH MAY CONTRIBUTE TO MALNUTRITION.

A survey of community conditions should be made to bring out the factors influencing malnutrition, in accordance with the discussion on pages 3–5. Factors of the kind mentioned in the following paragraphs should be particularly considered in rural districts.

The lack of medical and dental service in rural communities is a very important factor in influencing malnutrition. Information regarding names and addresses of county physicians and nurses, and

the names of city, county, and State health officers, the location and telephone number of the nearest hospital, and the names, addresses, and telephone numbers of physicians, nurses, and dentists in near-by towns, if collected and distributed to every rural home, should be of benefit in helping to bring country people into contact with those competent to give medical, nursing, or dental care. Traveling clinics have furnished services of inestimable value in certain rural regions. Health motor cars, supported by cooperating counties, also have proved their worth in several States. In one county in Ohio the local dental association made available the equipment for a traveling dental clinic and paid the salary of the dentist who accompanied it. The employment by a county of one or two itinerant dental hygienists should prove valuable.

While most farms have vegetable gardens, there is often a great lack of variety in the vegetables grown and a marked deficiency in the amount of green vegetables. In few instances is a sufficient amount of vegetables grown for use during the producing months; much less often is the supply large enough to permit some to be canned or dried for winter.

Although there is usually at least one dairy cow for each farm, in many instances all of the milk is sent to the creamery, with either no reservation or an insufficient one for the children in the farmer's family. In some localities, particularly in the South, many farmers are without cows and fresh milk is scarce.

Usually the main meal in the rural home is served at noon, when the school children are often absent, and too frequently the school children do not get a sufficient amount of nourishing food in the evening. In some instances rural children get no hot meal whatever during the day, since they have a cold lunch at school while the family's hot meal is being served at noon.

Coffee and tea drinking is very common among rural children, who often lack the very essentials of a proper diet which one would expect to find in the country, such as unskimmed milk, butter, and green vegetables. In too many instances these food essentials are shipped away, little or none being left for the children of the home.

The rural schoolroom is often badly ventilated and efforts to conserve fuel at home mean that many rural children breathe much bad air.

In many instances the water supply for the rural school is distant, and the children take little water during the day. Rural children often have long distances to walk to school and back and are sometimes given heavy chores at home, and these activities increase their energy requirements and induce overfatigue.

The lack of sanitary conveniences in many farm and school houses also has an important bearing on the health of rural children.

CENTERS FOR SERVICE, EQUIPMENT, AND STAFF.

For children under school age, the grange hall, the school or other community center, and the church generally offer convenient places for the conduct of nutrition work. The accessibility of the center should be carefully considered, and wherever possible the schools should be equipped with health rooms, which will make them useful as locations for work with the preschool as well as the school child.

In most rural communities the church or school is used as the center for so many activities that creed differences are not important. Where these differences are sharp, however, lines are drawn which make the use of the church inadvisable.

For the child of school age, the school probably will be the most convenient place. Permission to use the school building during school hours must be obtained from the county superintendent of schools or the rural-school trustees or committee. Rural children often have far to go to reach home, and in almost all instances weighing and measuring must be done during school hours. The approval of the superintendent usually is readily obtained when the matter has been fully explained. It is very essential that the teacher's enthusiastic cooperation be secured, for health education in the school must be left in her hands.

In the beginning the only equipment that can be expected in most rural schools is a set of scales, individual and class weight charts, and a simple hot lunch equipment.

Weighing and measuring may be done by the teacher or some other person, and local physicians are usually entirely willing to give physical examinations to those 10 per cent or more underweight. If physicians are not available, examinations may be given by a nurse. Consultant service of a trained nutrition worker should be available wherever possible for advice and guidance in nutrition problems. Such a person may be employed on part time provided the necessary connections can be made, and if there is in the community a married woman, well trained in home economics, or some local worker such as a home demonstration agent, Red Cross nutrition worker, or itinerant Smith-Hughes home economics teacher, her services may well be utilized.

When the community is not provided with dental services, an itinerant dentist may be secured. In one county in which nutrition work on an intensive scale was done, the dental association supplied the equipment for a traveling clinic and assisted in paying the dentist.

FINANCING THE WORK.

In the rural districts public support for this work will usually come slowly, but when it is well established and the parents' indorsement has been secured, interest spreads rapidly and county commissioners often may be induced to appropriate funds, especially for the hot midday meal at school.

The importance of a nourishing noon meal should be emphasized at rural teachers' institutes, and the character and cost of scales and hot lunch equipment and ways and means of meeting such expenses form fruitful subjects for discussion. In many rural districts county officials will not vote funds until the midday meal at school has been tried out; in such cases entertainments have been given to raise the money.

OBTAINING HOME COOPERATION.

The objects of the work should be carefully explained to the public at some local church or social meeting, and parents should indorse the plan before work is started with their children. Home cooperation is fundamental and home contacts should be made through a resident trained worker, if possible, such as the county nurse or home demonstration agent. If they are not available, some other local person should be trained for the purpose, since a temporary worker in the community usually is considered an intruder. Home visits are essential, for without the personal touch parents have but little information as to what is developing. They have not the means for obtaining information possessed by the urban resident. Mothers and fathers should be urged to come to the class while the children are being weighed and remain after the weighing for special discussion.

Valuable contacts may be made by having one or two especially tactful mothers of children who have gained visit the homes of children who have not gained. Experience of friends and neighbors will often be accepted by the rural woman where the dictum of a trained worker would not be accepted. Sometimes it will be found that the child's nutrition is considered a matter too personal for an outsider to discuss. Reports concerning the progress of children who have gained will help to stimulate parents of undernourished children to bring them into the gaining group.

THE EDUCATIONAL POSSIBILITIES OF THE LUNCH IN THE RURAL SCHOOL.

The fact that the rural child is in school all day, and that the luncheon hour is something of a social occasion, gives rise to an opportunity for discussing nutrition in a natural way. The rural

teacher usually knows conditions in the homes of the children more intimately than the urban teacher, and this often makes it possible to do unusually effective educational work during the lunch hour. Home interest usually will be reflected in better lunches brought to the school, and, if its educational possibilities are utilized, the hot midday meal at school will have an important influence on home diet.

Milk may be brought to school individually, by the children in quantity, by children taking turns, or by some children who furnish it regularly for the entire group, the members of which will pay the cost. Whoever supervises the work should see that every precaution is taken to keep the milk cool and sweet and to safeguard its purity and quality by securing it from sources approved by local health authorities. Where milk can not be secured that has been pasteurized or proved pure by expert test, it is always safer to boil it. In localities where the local supply of milk is unsatisfactory, either because of quality or availability, powdered milk may be made to serve almost as well as fresh milk, especially for soup or cocoa.

APPENDIX.

Some Good Food Habits.[1]

AT least a pint of clean, pure milk a day—a quart wherever possible. Where a quart is used, it is preferable that not more than one cupful or glassful should be drunk at each meal; the remainder should be used on cereals and in cooked foods, such as creamed vegetables and meats, custards, junket, and blanc mange.[2]

At least two vegetables every day; a green or leafy vegetable two or three times a week.

Bread and butter, or whole grain cereal with unskimmed milk, in some form at every meal.

Fresh fruit every day.

Some eggs, poultry, or meat every day. (Preferably meat should not be used at night.)

No tea or coffee.

No sweets between meals.

Chew food thoroughly. Do not wash it down with liquids.

Eat slowly; sit down at mealtimes.

Some Good Health Habits.[1]

Drink three or four glasses of water every day. (One glass should be taken immediately upon arising.)

Sleep each night the number of hours indicated below.[3] Bedroom windows should be opened wide, and children should be covered warmly in cold weather.

	Hours.
4 and 5 years, at least	12
6 and 7 years	11½
8 and 9 years	11
10 and 11 years	10½
12 and 13 years	10

Play out of doors for at least two hours every day unless it is considered desirable to rest instead. When weather does not permit going out of doors, play indoors with windows open.

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[1] These habits, in general, should be observed by children in varying conditions. Modifications with regard to food, rest, and play, however, should be made, under proper direction, for children of low physical vitality.

[2] If, in the judgment of the physician, a child is not getting enough milk, but has a diet already sufficiently high in calories, milk should be substituted for a portion of the food already given, otherwise overfeeding may result. This is particularly true for children, 2 years old or more, who have a fair amount of meat in the diet. In such cases it is usually inadvisable for milk to be drunk with the midday or main meal.

[3] A rest period may be necessary during the day in addition to the number of hours indicated.

To obtain this much sleep children of the various ages indicated should go to bed at about the times shown below:

4 years, not later than 6.30.

5–7 years, not later than 7.

8–11 years, not later than 8.

12–14 years, not later than 9.

Have a natural bowel movement every day, preferably in the morning right after breakfast.

Wash hands before eating and after going to toilet.

Always carry a handkerchief and be careful to protect other people by holding it over the mouth and the nose and bowing the head when coughing or sneezing.

Brush the teeth at least once a day, especially before going to bed.

Take a full tub or sponge bath at least once a week.

NATIONAL CHILD WELFARE AND HEALTH AGENCIES FROM WHOM SPEAKERS AND EXHIBIT MATERIAL MAY BE OBTAINED.

[No attempt has been made to make these lists all inclusive. Excellent sources have doubtless been omitted.]

Speakers.—The agencies listed below give terms on application. As a rule, speakers from these sources prefer to discuss child health and welfare in general, considering malnutrition as related thereto. Those starred discuss malnutrition more especially.

American Child Health Association, 370 Seventh Avenue, New York, N. Y.

American Red Cross, Washington, D. C., and divisional headquarters at Boston, Atlanta, Chicago, St. Louis, and San Francisco.

American School Hygiene Association, 1101 Fulton Building, Pittsburgh, Pa.

Bureau of Education, United States Department of the Interior, Washington, D. C.

Children's Bureau, United States Department of Labor, Washington, D. C.

*Elizabeth McCormick Memorial Fund, 848 North Dearborn Street, Chicago, Ill.

National Child Labor Committee, 105 East Twenty-second Street, New York, N. Y.

National Tuberculosis Association, 370 Seventh Avenue, New York, N. Y.

*Nutrition Clinics for Delicate Children, 44 Dwight Street, Boston, Mass.

United States Public Health Service, Washington, D. C.

Exhibit material and literature.—Pamphlets, bulletins, charts, posters, lantern slides, or films on health and nutritional subjects may be secured from the following agencies which will furnish full information regarding the exact kinds of material available and terms upon which it may be obtained:

American Child Health Association, 370 Seventh Avenue, New York, N. Y. (Reprints from "Mother and Child.") (Exhibits, pamphlets, posters, lantern slides; performances by dramatic characters.)

American Medical Association, 535 North Dearborn Street, Chicago, Ill. (Pamphlets, posters, and lantern slides.)

American Red Cross, Washington, D. C., and divisional headquarters at Atlanta, Boston, Chicago, St. Louis, and San Francisco.

Association for Improving the Condition of the Poor, 105 East Twenty-second Street, New York, N. Y. (Posters and food charts.)

Bureau of Social Education, National Board, Young Women's Christian Association, 600 Lexington Avenue, New York, N. Y (Pamphlets, posters, lantern slides, and motion pictures of interest to girls in their teens.)

Children's Bureau, United States Department of Labor, Washington, D. C. (Bulletins, lantern slides, wall panels, films, and charts.)

Committee on Foods and Nutrition, National Research Council, 1701 Massachusetts Avenue, Washington, D. C.

Elizabeth McCormick Memorial Fund, 848 North Dearborn Street, Chicago, Ill. (Exhibits, posters, lantern slides, films, and pamphlets.)

Joint Committee on Health Problems in Education, Dr. Thomas D. Wood, 525 West One hundred and twentieth Street, New York, N. Y. (Set of 58 health charts, lantern slides, and pamphlet reports.)

Lying-in Hospital, 426 East Fifty-first Street, Chicago, Ill. (Film "Starting the Baby Right.")

National Dairy Council, 910 South Michigan Avenue, Chicago, Ill. (Booklets, posters, lantern slides, and devices.)

National Organization for Public Health Nursing, 370 Seventh Avenue, New York, N. Y. (Lantern slides, films, and pamphlets.)

National Tuberculosis Association, 370 Seventh Avenue, New York, N. Y. (Films, health playlets, Modern Health Crusade material.)

Office of Home Economics, States Relations Service, United States Department of Agriculture, Washington, D. C. (Charts and bulletins on composition of food materials, food selection and meal planning, and children's diet—the last for both white and colored children.)

United States Bureau of Education, Washington, D. C. (Bulletins, classroom weight records.)

United States Public Health Service Washington, D. C. (Literature and samples of forms.)

Many State departments of health or education and also extension departments of State universities can furnish excellent material. For further suggestions, see Nutrition Bibliography compiled by the New York Nutrition Council, issued by Health Service, American Red Cross, New York County Chapter, 598 Madison Avenue, New York, N. Y.

DEFINITION OF MALNUTRITION.

Malnutrition is a term commonly applied to a condition of general physical subnormality in children. Certain characteristic symptoms and pathological signs are usually present which indicate unmistakably that there is a lack of proper development.

Standards for identification.—Probably the most simple test of a child's physical condition is the relation of his weight to his age and height. Other important considerations are muscular development and tone, animation and endurance, and the color and condition of the skin and visible mucous membranes.

Extended clinical studies of individual cases have shown that any child who is habitually 10 per cent or more underweight for his age and height should be classed in the group needing a thorough examination to determine exactly the responsible factors and appropriate treatment required. At the other extreme are those less frequent cases of children who usually show by a condition of obesity that they are not developing normally or are being overfed. Clinical evidence indicates that when a child is 20 per cent above the average weight for his age and height, as a rule, he has reached a point which may be considered abnormal, where he begins to show lessened activity and a general lowering of health, convenience, and comfort; but here also, a thorough examination is most important.

In underdeveloped or undernourished children there will often be found, besides the usual underweight, some or all of the following conditions: Lines under the eyes, anxious expression, pallor, mouth breathing and other indications of nasopharyngeal obstruction; enlargement of the cervical glands, fatigue posture, round shoulders, lateral curvature, flat chest, rigid spine, ptosis, prominent abdomen, pronated or flat feet. By fatigue posture is meant an appearance similar to the stoop which results from muscular weakness in old age. Not all underdeveloped children present these signs, but the majority present some or many of them. Many of these children evince extreme restlessness, nervousness, tenseness, and irritability, while others develop an extreme lassitude.

While the majority of children who need special attention because of undernourishment will be found among the group that is below weight for age and height, there is a small percentage that show a relation between weight for age and height that is

equal to the average, but nevertheless fall below par in other respects. These children may be suffering from an inhibition in development, but this can not be determined definitely without taking inheritance[4] and general vitality into account. Under a suitable health régime, with defects eliminated, such children usually manifest a capacity for growth in both weight and height.

There are also occasional individuals who are up to average standards of weight and height but are flabby and inactive and show other signs associated with malnutrition. Underlying such a condition, if it is not due to muscular inactivity, may be some toxic cause, hookworm or a disease due to nutritional deficiency or disturbance. Malnutrition may be a symptom of many serious organic conditions, such as tuberculosis, cardiac disease, syphilis, nephritis, or diabetes, or of grave anemia or previous acute illness, etc. Such cases as these clearly should not be diagnosed as cases of malnutrition, and before children are to be considered as simply suffering from malnutrition these things should be excluded. It is also important, in judging whether a child is making proper progress in physical development, to take careful account of variations in growth which have been observed during certain seasons.

Characteristic signs of improvement.—As children who are underweight and below par physically approach average weight there is usually evidence of a transformation that is both physical and mental. There is a return of color and a glow of health that is unmistakable. Normal reactions appear; those dull and listless become bright and alert, in others restlessness and irritability diminish, the child becoming less "finicky and nervous." Parents often state that the patient "has become a different child."

When physical defects have been corrected and an underdeveloped child has become what may be designated as "free to gain," nature supplies a strong impulse to his development. This is usually evidenced by a rapid advance in weight, the rate of which is gradually reduced as he approaches normal condition.

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[4] It is impossible for a layman to tell whether an excess of weight for height or the reverse is a normal result of heredity and even physicians and trained examiners should only be influenced by such considerations after careful study of all factors.

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